



Policies & Programs to Support Renewable Energy in New England

Robert C. Grace

Sustainable Energy Advantage, LLC

New England Regional Wind Issues Workshop

Boston, MA – October 25, 2001

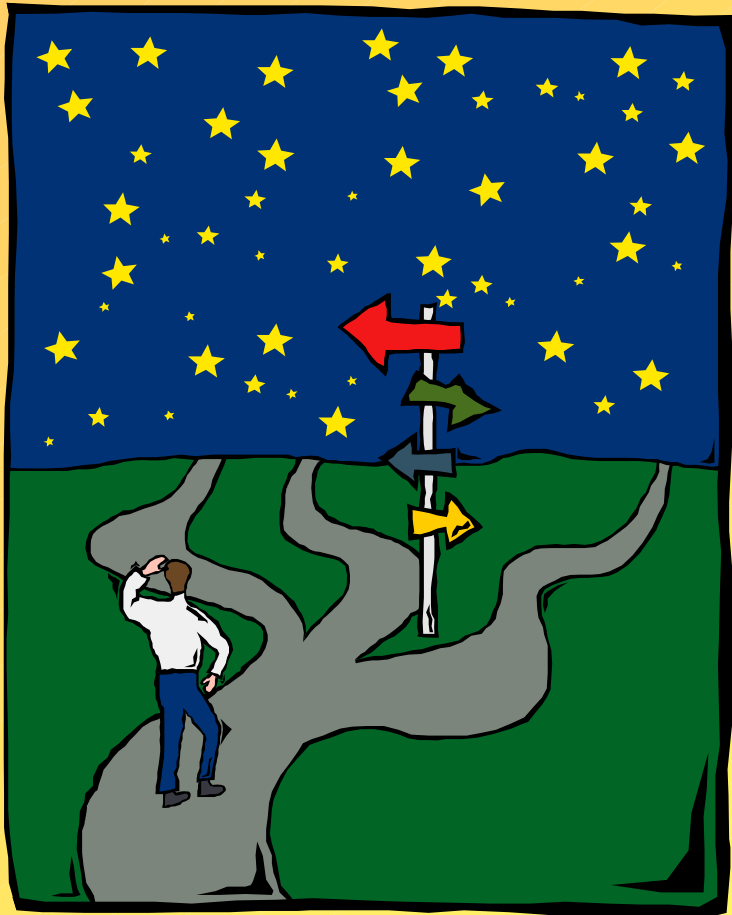


Policy Drivers: Overview

- Purchase Mandates
- System Benefit Charge (SBC) Funds
 - a.k.a. Public Goods Funds (PGF)
- Generation Attribute Requirements & Infrastructure
 - Fuel source (and emissions) disclosure requirements
 - Emission Performance Standards
 - Accounting & Verification Systems
- Air Pollution and Climate Change Policies



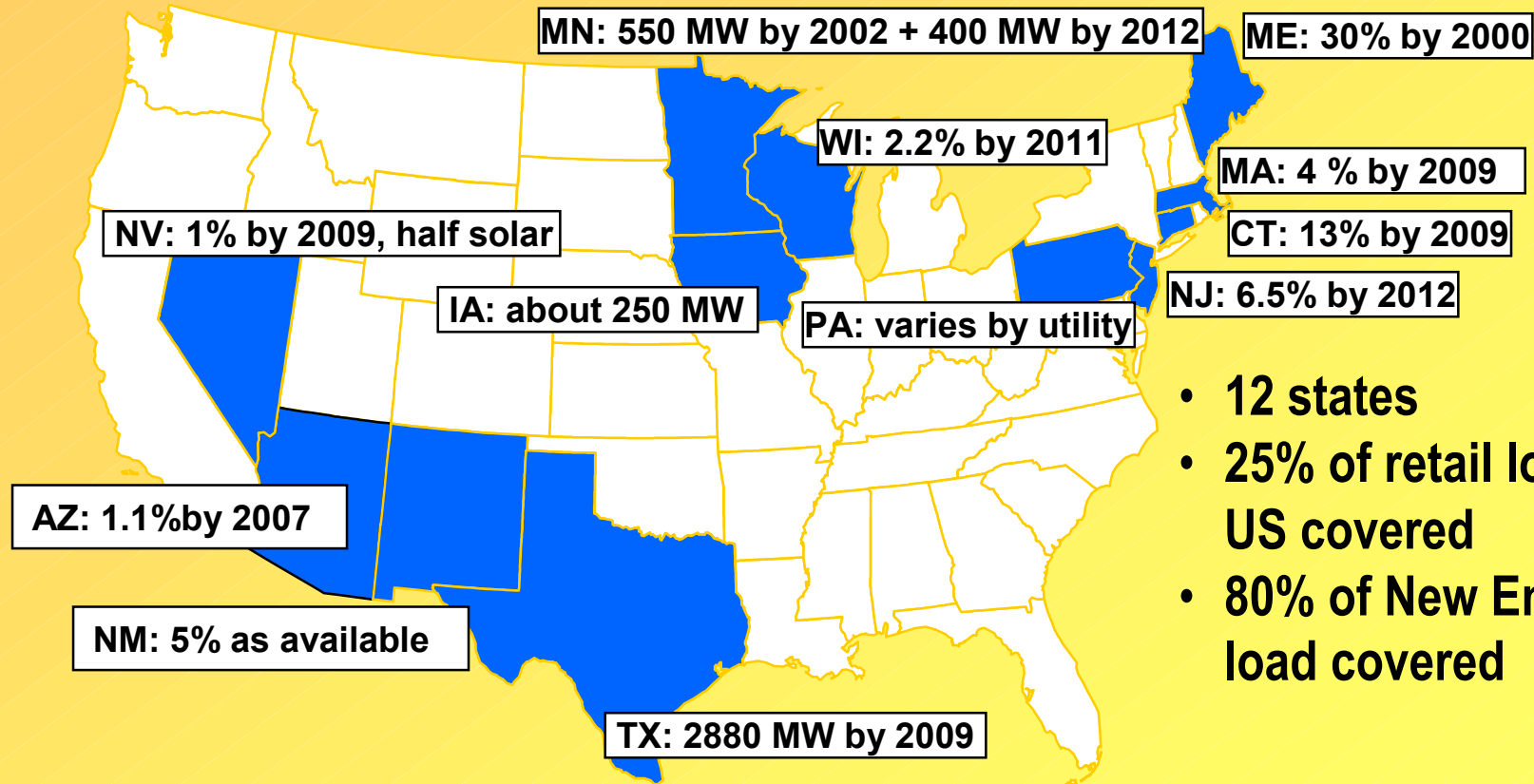
Disclaimer



Any opinions and
prognostications
presented here
are my own.



State RPS and RE Purchase Obligations



- 12 states
- 25% of retail load in US covered
- 80% of New England load covered



State Renewables Purchase Mandates

- Portfolio Standards: Requirements for retail suppliers to buy minimum percentage from eligible generators
- 3 portfolio standards in NE:
 - Connecticut Renewable Portfolio Standard
 - Massachusetts Renewable Portfolio Standard
 - Maine Eligible Resources Portfolio Standard
- State Facilities Renewables Purchase Mandates



Connecticut RPS

“Maintain & Grow”

- **Class I = Growth**
 - solar, wind, new sustainable biomass, landfill gas, and fuel cells (any fuel)
 - 0.5% in 2000 → 1% in 2002 → 6% in 2009 & beyond
- **Class II = Maintenance**
 - licensed hydro, municipal solid waste, other biomass
 - Class I or II = 5.5% in 2000 → 6% in 2005 → 7% in 2009 & beyond



Connecticut RPS (2) Issues & Challenges

- Most of market currently exempt
 - Standard offer (SO) supply exempt
 - Little retail competition
 - Suppliers can petition for 2-year delay in compliance
- Design features
 - Vague penalties undermine incentive to comply, contract for supply (weak stick)
 - No flexibility mechanisms (no carrot)
 - Aggregate (company) basis would count “green” sales towards compliance



Connecticut RPS (3)

- Status/Prognosis
 - RPS began July 2000 – negligible impact/ineffective to date
 - Substantial potential starting 2004 (SO ends, unless extended)
 - With ramp-up eliminated, beware substantial jump in requirements!
- To be resolved/Opportunities for input to improve
 - Remove future uncertainty:
 - If General Assembly extends SO, essential to ensure RPS changed to apply to SO supplier thereafter
 - Encourage early compliance credit to address 2004 jump to 2%
 - Clarify application of penalties



Massachusetts RPS

“Growth RPS”

- **New Renewables Requirement = Growth**
 - 1% of sales from new renewables in 2003 → 4% in 2009, +1%/yr thereafter until date determined by DOER
- **New Renewable Generation:**
 - Commercial operation 1998 or later
 - “Vintage Generation” capacity or energy expansion over baseline
- **Eligible Renewables defined as:**
 - Solar; wind; ocean thermal, wave, or tidal; fuel cells using renewable fuels; landfill gas
 - Low-emission, advanced biomass
 - gasification eligible; pile burn or stoker ineligible, all others case-by-case
 - DOER can add technologies after hearings
 - Inside NE, or outside if an ISO “external unit contract”



MA RPS (2)

- What about existing renewables?
 - Act defines renewables more broadly to include waste-to-energy; *naturally flowing water and hydroelectric*
 - Restructuring Act gives authority to maintain historic renewables contribution = 5.7 – 13.3% (depending on hydro interpretations)
 - Due to ambiguous legislation, surplus supply, DOER proposed to monitor but not require maintenance of existing renewables
- Other key features:
 - Compliance through Generation Information System “certificates”, contracts with generators, or “alternative compliance” via 5¢/kwh contribution to MRET
 - “Product-based” compliance
 - Flexibility through early compliance and limited banking provisions



Massachusetts RPS Status/Prognosis (3)

- New RPS beginning 2003 expected to be most significant renewable energy policy in NE, but...
- Uncertainty has so far thwarted development
- Applicability to Standard Offer (SO) and Default Service (DS) had been contested by utilities
 - Delayed release of draft regulations
- The good news: Draft regulations just released applicable to SO & DS, rulemaking underway
 - Hearings this week



MA RPS (4)

Issues & Challenges

- Start-date nears and regs not final
 - Is there sufficient lead time to bring new renewables on-line?
- Most load served today (SO & DS) by “wires” companies
 - If they don’t enter into contracts sufficient for financing quickly... who will?
- Lack of clarity may undermine investment
 - Role of imports (how large a hurdle is proposed “external Unit Contract” requirement?)
 - Biomass case-by-case eligibility determination
 - Today, is there any indisputably eligible biomass on-line?
- Will alternative compliance 5¢ “cap”:
 - drive the near-term market price if eligibility is too tight?
 - create firm enough demand?
- Should DOER establish a baseline requirement?



Maine Eligible Resource Portfolio Requirement

- “Partial Maintenance”
 - As licensing condition, 30% of retail sales from 2000 on from:
 - Fuel cells, tidal, solar, wind, geothermal, hydro, biomass, and MSW (under 100 MW); any size high efficiency fossil cogen
 - Historical mix was 40% from these resources
- Issues/Challenges
 - Over-broad eligibility → eligible supply far exceeds standard
 - Today verification method requires costly contract-path
 - likely to switch to ISO-NE certificates system once developed
 - Unclear standard end-date: PUC will revisit RPS within 5 years



Maine Eligible Resource Portfolio Requirement (2)

- Status/Prognosis
 - Took effect March 1, 2000
 - Low impact on maintaining, no impact on increasing renewable supply
 - Transaction costs increase rates, not benefiting renewables
 - Under attack from all sides
 - PUC has favored dropping RPS in favor of renewables fund
- To be resolved/Opportunities for input
 - Continuing debate: scrap it, fix it or replace with SBC?



Texas: An RPS Success Story

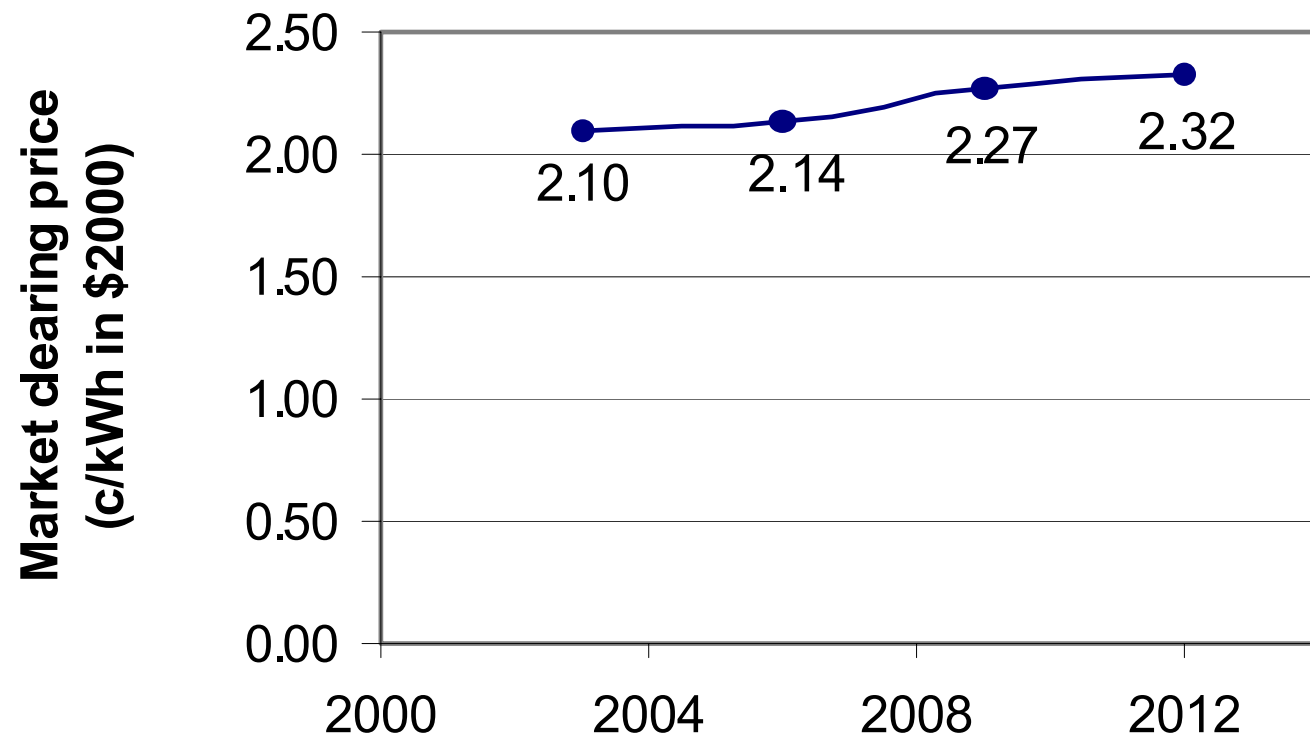
- RPS won't take effect until 2002, but...
 - target of 2000 MW of new renewables by 2009
 - largest market in US for renewable energy today
 - ~900 MW of new wind by 12/2001 (compared to 400 MW 2002 obligation)
 - Renewable Energy Credit price ~ 0.5 cents/kWh
- Success Factors:
 - Committed PUC
 - Stable, predictable, and durable standard with sufficient leeway for development
 - Strong and automatic enforcement
 - REC tradability with central administrator; 5¢ price cap
- What is different from New England?
 - price is not replicable: siting constraints, poorer wind resource
 - Utilities are major players – balance sheet finance and long-term contracts



What Will Be the Cost to Comply with RPS Policies?



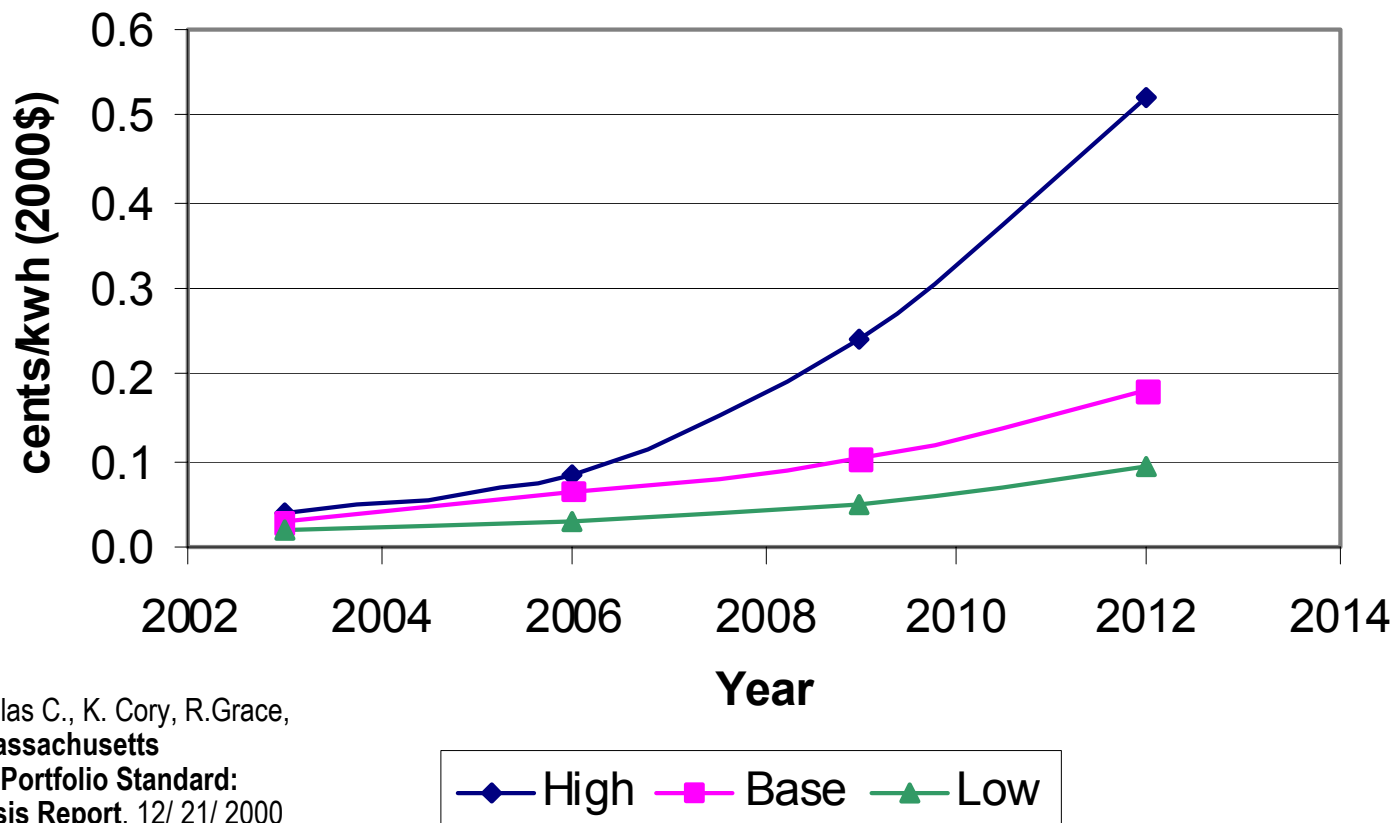
Renewable Generation Premium Above Wholesale Market Price (Base Case)



Smith, Douglas C., K. Cory, R. Grace, R. Wiser, Massachusetts
Renewable Portfolio Standard: Cost Analysis Report, 12/ 21/ 2000



New RPS Requirement - Range of MA Rate Impacts



Smith, Douglas C., K. Cory, R. Grace,
R. Wiser, **Massachusetts**
Renewable Portfolio Standard:
Cost Analysis Report, 12/ 21/ 2000



RPS Cost Study Caveats

- Potential variation may be driven by:
 - Eligibility
 - Short-term resource scarcity ignored
 - Restrictions on imports
 - Commodity market prices
 - Role of SBC funds
 - Locational pricing
- Proposed MA RPS rules have tighter restrictions on biomass eligibility and import eligibility
 - implies higher prices



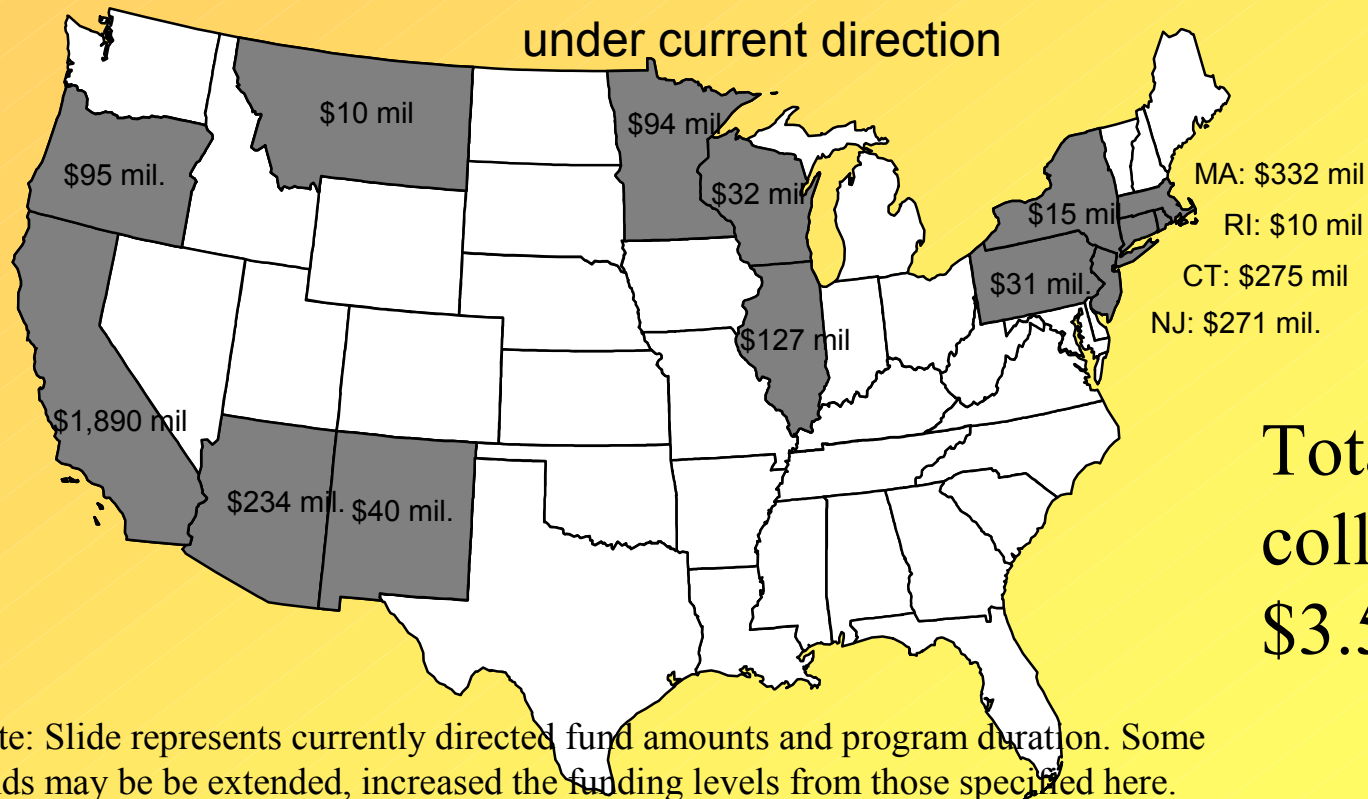
State Facilities Renewables Purchase Requirements

- Massachusetts Restructuring Act required study of 10% minimum renewables procurement for state facilities
 - Has not yet resulted in any procurement
- Other states have pursued state renewables purchases
 - Maryland Executive Order (March 2001)
 - 6% non-hydro renewables, up to 3% can be waste-to-energy
 - 48 GWh/yr RPF recently issued
 - New York Executive Order 111
 - 20% renewable energy for state facilities by 2010
 - No hydro; sustainable biomass



State Renewable Energy Funds

Cumulative Funds Collected 1998-2012
under current direction



Total funds
collected:
\$3.5 billion!!!

Note: Slide represents currently directed fund amounts and program duration. Some funds may be extended, increased the funding levels from those specified here.



System Benefit Charge (SBC) Funds

- Connecticut
- Massachusetts
- Rhode Island
- Proposed (New Hampshire, Maine)



Per Capita Annual Funding - System Benefits Charges

• Connecticut	\$7.3	• Rhode Island	\$2.0
• Massachusetts	\$4.9	• Wisconsin	\$0.6
• California	\$4.1	• Pennsylvania	\$0.5
• New Jersey	\$3.9	• Illinois	\$0.4
• Oregon	\$2.6	• New York	\$0.3
• Montana	\$2.3		



Connecticut Clean Energy Fund

- \$14m/yr thru 2002; \$22.5m/yr thru 2004; \$30 m/yr until sunset
- Focus:
 - CT and bordering states
 - Investment model; may shift towards grants, other mechanisms
- So far, funded:
 - Companies: 2 green retailers, wind developer, PV manufacturer
 - Resource assessment & wind mapping
 - Biomass facility feasibility study;
- In the future?



Massachusetts Renewable Energy Trust

- \$30 - 20m/yr indefinitely (?)
- New England focus
- Program areas:
 - distributed generation, green buildings, green power
- Business incubator model (MA Technology Collaborative)
- So far, funded:
 - Regional wind mapping (with CT & Northeast Utilities)
 - Removing barriers to distributed generation
 - Green supply pre-development - wind, biomass, landfill gas, PV
 - Green demand aggregation (9 awards)
 - Fuel cell feasibility & demonstration projects
 - Solar-to-Market Initiative
- In the future?



Rhode Island Renewable Energy Collaborative

- \$2 - 3 m/yr until 2006
- Focus: grant model; customer-sited generation; bulk renewable power supply and demand; building sustainable market
- Funded in the past:
 - PV and fuel cell grants
 - wind pre-development
- New integrated suite of programs create opportunities for wind and other renewables



New RI Green Power Programs

- Renewable Generation Supply RFP
 - \$1.25m
 - production incentive available up to \$30/MWh for 5 years
 - Limited for sales to RI customers
- RFP for Purchase and Sale of Renewable Electricity to Large Electricity Customers
 - \$500K available
- Education, Aggregation & Market Building RFP (new)
 - \$350K available
 - green power educational materials
 - Targeted promotion of green power purchases
 - establishing green power buying groups



New RI Green Power Programs (cont.)

- Residential & Small Business Green Power Incentives
 - Targeted at reducing customer acquisition and startup costs, building critical mass for thriving market – pays for success
 - Offers rebate for registered retail suppliers offering qualifying green power offerings (minimum new %)
 - \$125/cust. for first 5,000 residential customers, \$75 thereafter
 - \$250/cust. for the first 1,000 small business customers, \$125 thereafter
 - \$2m available, could support up to 20,000 green power customers



Disclosure Requirements

- Requirements to disclose fuel source/generation type & in some cases emissions to retail customers
- Supports differentiation of environmentally preferable generation sources
- In place:
 - Massachusetts, Maine
- To come (?):
 - Connecticut, Rhode Island, New Hampshire



Emission Performance Standards (EPS)

- Requirement for supply mix annual average emissions to fall below threshold
 - SO_x , NO_x , CO_2
 - In future, possibly Mercury or CO
- Internalizes value of zero emission resources
- Established by legislation in Massachusetts (by mid-2003) & Connecticut (only upon wide adoption of similar standards)
- See NESCAUM Model Rule



Attribute Accounting & Verification Systems

- New England “Generation Information System” (G.I.S.) establishes tradable certificates market for *all* generation – under development for 2002
- Certificates represent (title to) all attributes of generation, ability to claim for RPS, EPS compliance, and disclosure purposes
- Automated Power Exchange (APX) selected by RFP as administrator, system development about to start
 - NEPOOL recently approved APX contract
 - Costs to be supported by retail loads



Air Pollution & Climate Change Policies

- Today wind cannot benefit from Federal SO₂ trading regime
- Air pollutant cap & trade programs at state and regional level
 - Will there be a role for renewables to play?
- Regional commitments to reduce greenhouse gas (GHG) emissions
 - State GHG plans
 - How will broad policy objectives translate into specific drivers for wind?



Conclusion:

- Many state policies in place to support renewables
- Little to show for it, yet
- Opportunities to engage and get policies working as intended
 - CT RPS & SBC
 - MA RPS, SBC & state purchases (?)
 - ME RPS vs. SBC
 - NH renewables legislation (RPS? SBC? Marketing?)
- Need effective integration for renewables to benefit from air pollutant cap & trade, greenhouse gas policies



Sustainable Energy Advantage, LLC

**4 Lodge Lane
Natick, MA 01760**

tel. 508.653.6737

fax 508.653-6443

bgrace@seadvantage.com

www.seadvantage.com